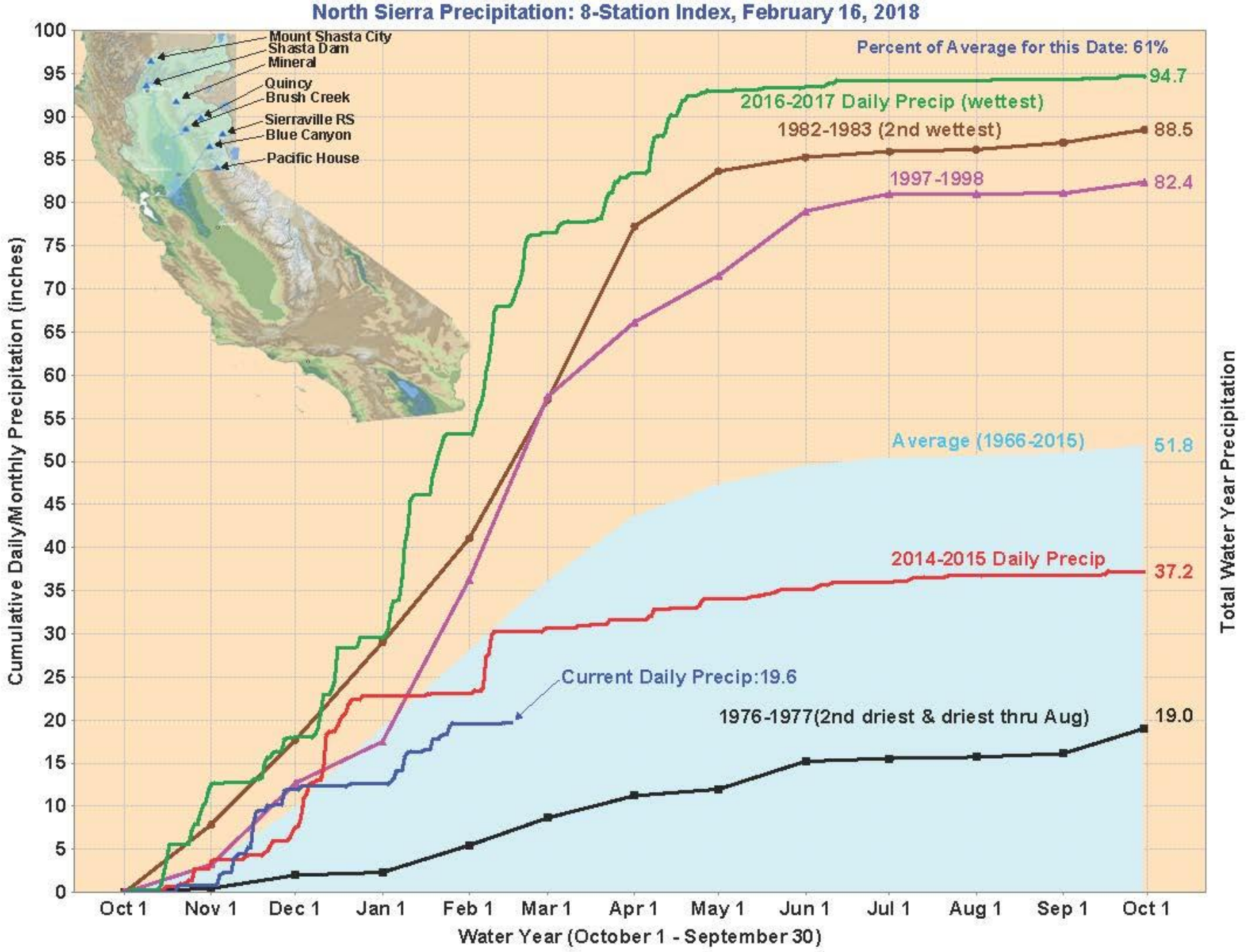
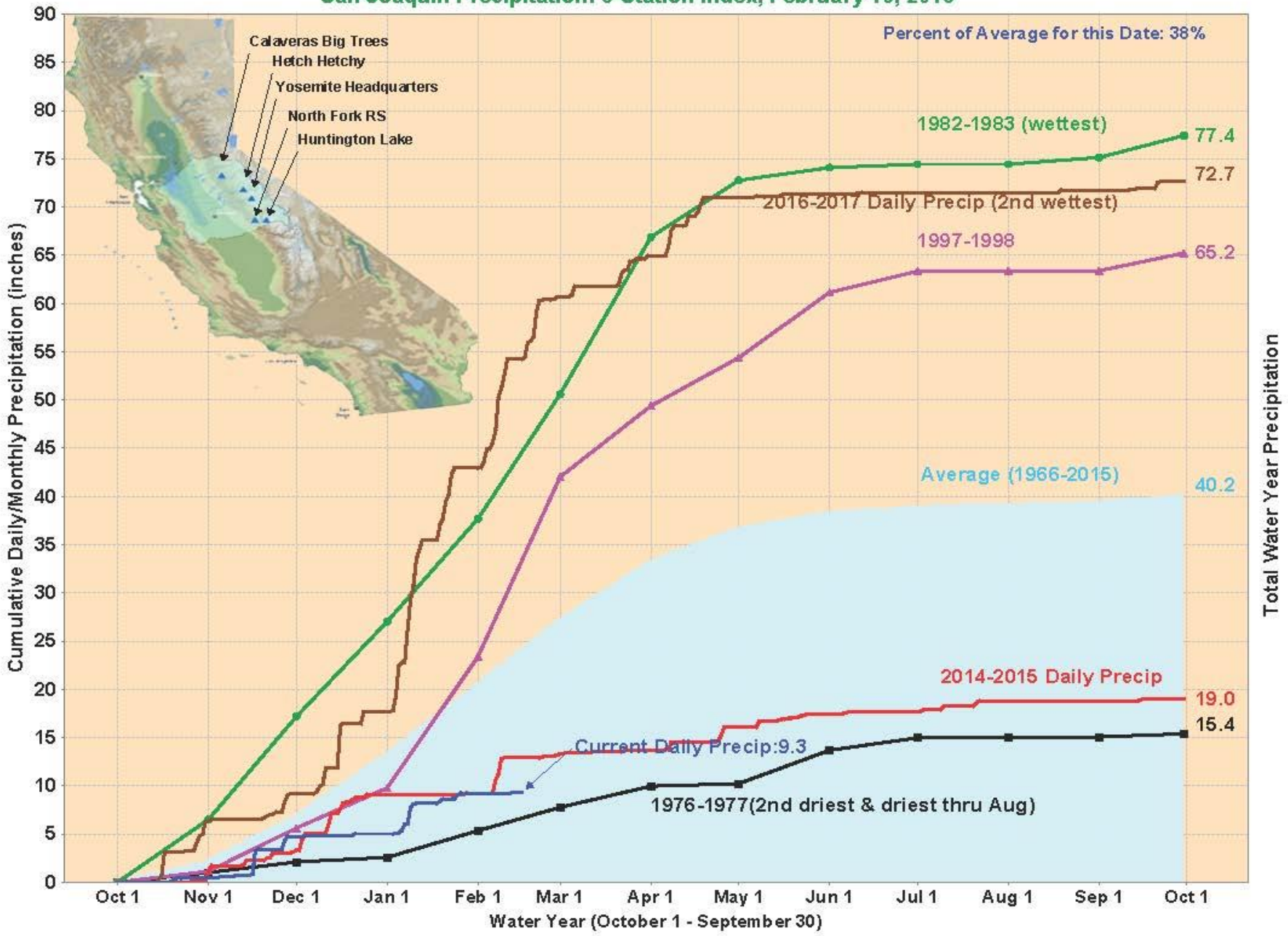
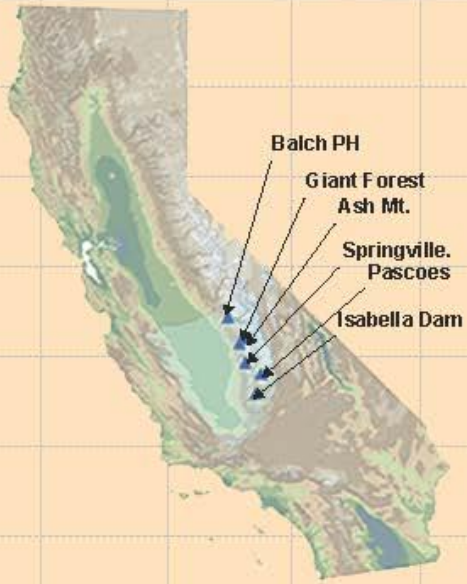
Hydrology and Project Operations Update

State Water Resources Control Board
February 20, 2018 – Item 4a


North Sierra Precipitation: 8-Station Index, February 16, 2018
Mount Shasta City
Shasta Dam
Mineral
Quincy
Brush Creek
Sierraville RS
Blue Canyon
Pacific House
Percent of Average for this Date: 61%
2016-2017 Daily Precip (wettest)
94.7
1982-1983 (2nd wettest)
88.5
1997-1998
82.4
Average (1966-2015)
51.8
2014-2015 Daily Precip
37.2
Current Daily Precip:19.6
1976-1977(2nd driest & driest thru Aug)
19.0
Cumulative Daily/Monthly Precipitation (inches)
Total Water Year Precipitation
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Aug 1
Sep 1
Oct 1
Water Year (October 1 - September 30)


San Joaquin Precipitation: 5-Station Index, February 16, 2018
Percent of Average for this Date: 38%
Calaveras Big Trees
Hetch Hetchy
Yosemite Headquarters
North Fork RS
Huntington Lake
1982-1983 (wettest)
77.4
72.7
2016-2017 Daily Precip (2nd wettest)
1997-1998
65.2
Average (1966-2015)
40.2
2014-2015 Daily Precip
19.0
15.4
Current Daily Precip:9.3
1976-1977(2nd driest & driest thru Aug)
Cumulative Daily/Monthly Precipitation (inches)
Total Water Year Precipitation
Water Year (October 1 - September 30)
Oct 1
Nov 1
Dec 1
Jan 1
Feb 1
Mar 1
Apr 1
May 1
Jun 1
Jul 1
Aug 1
Sep 1
Oct 1
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90

Tulare Basin Precipitation: 6-Station Index, February 16, 2018



Percent of Average for this Date: 26%

1968-1969 (Wettest) 56.3

1997-1998 (2nd wettest) 54.2

2016-2017 Daily Precip 46.9

Average (1966-2015) 28.8

2014-2015 Daily Precip 13.5

1976-1977 Daily Precip (Driest) 10.9

Current Daily Precip:4.5

Cumulative Daily/Monthly Precipitation (inches)

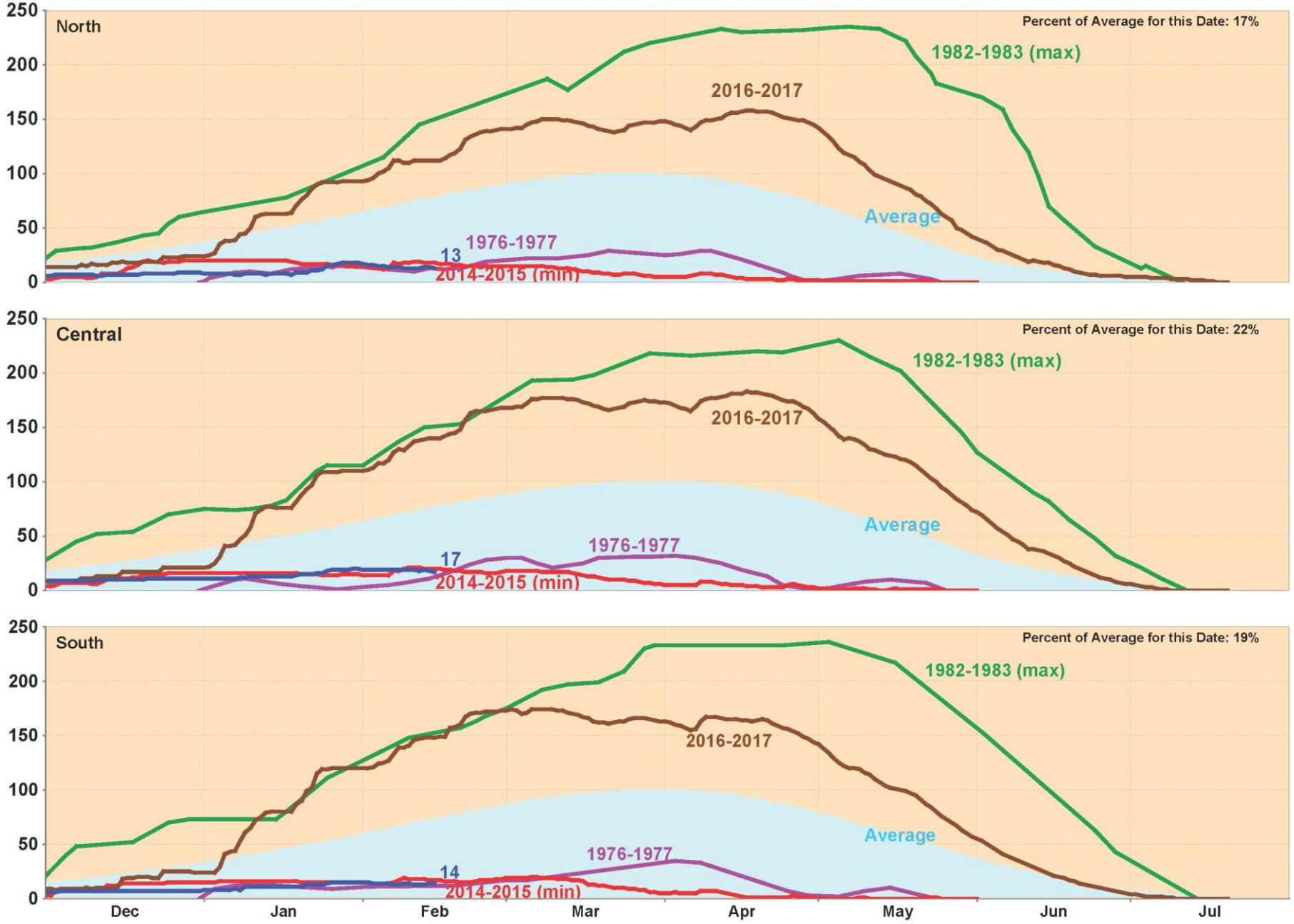
Total Water Year Precipitation

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70

Oct 1 Nov 1 Dec 1 Jan 1 Feb 1 Mar 1 Apr 1 May 1 Jun 1 Jul 1 Aug 1 Sep 1 Oct 1

Water Year (October 1 - September 30)

California Snow Water Content, February 15, 2018, Percent of April 1 Average



Statewide Percent of April 1: 15%

Statewide Percent of Average for Date: 20%

Statewide Summary of Snow Water Content

Current Regional Snowpack from Automated Snow Sensors

% of April 1 Average / % of Normal for This Date

NORTH	
Data as of February 15, 2018	
Number of Stations Reporting	30
Average snow water equivalent (inches)	3.7
Percent of April 1 Average (%)	13
Percent of normal for this date (%)	17

CENTRAL	
Data as of February 15, 2018	
Number of Stations Reporting	39
Average snow water equivalent (inches)	5.3
Percent of April 1 Average (%)	17
Percent of normal for this date (%)	22

SOUTH	
Data as of February 15, 2018	
Number of Stations Reporting	29
Average snow water equivalent (inches)	3.7
Percent of April 1 Average (%)	14
Percent of normal for this date (%)	19

STATE	
Data as of February 15, 2018	
Number of Stations Reporting	98
Average snow water equivalent (inches)	4.3
Percent of April 1 Average (%)	15
Percent of normal for this date (%)	20

Statewide Average: 15% / 20%

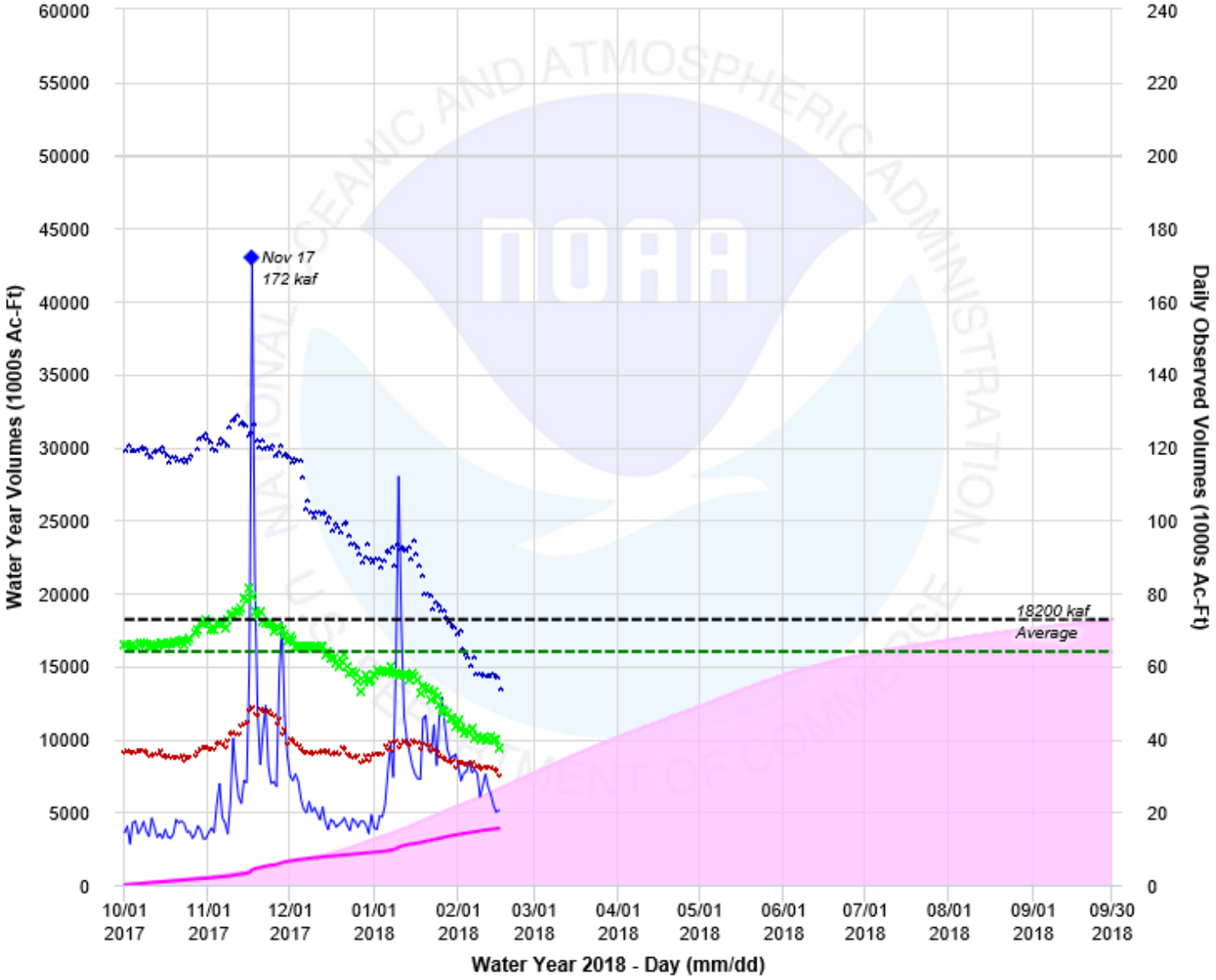
Data as of February 15, 2018

Updated 02/16/2018 12:15 PM

SACRAMENTO VALLEY WSI (SACC0) 02/16/2018

Most Probable: 9370 kaf | 52% of Average | 58% of Median

Created: 02/16/2018 at 08:22 AM PST

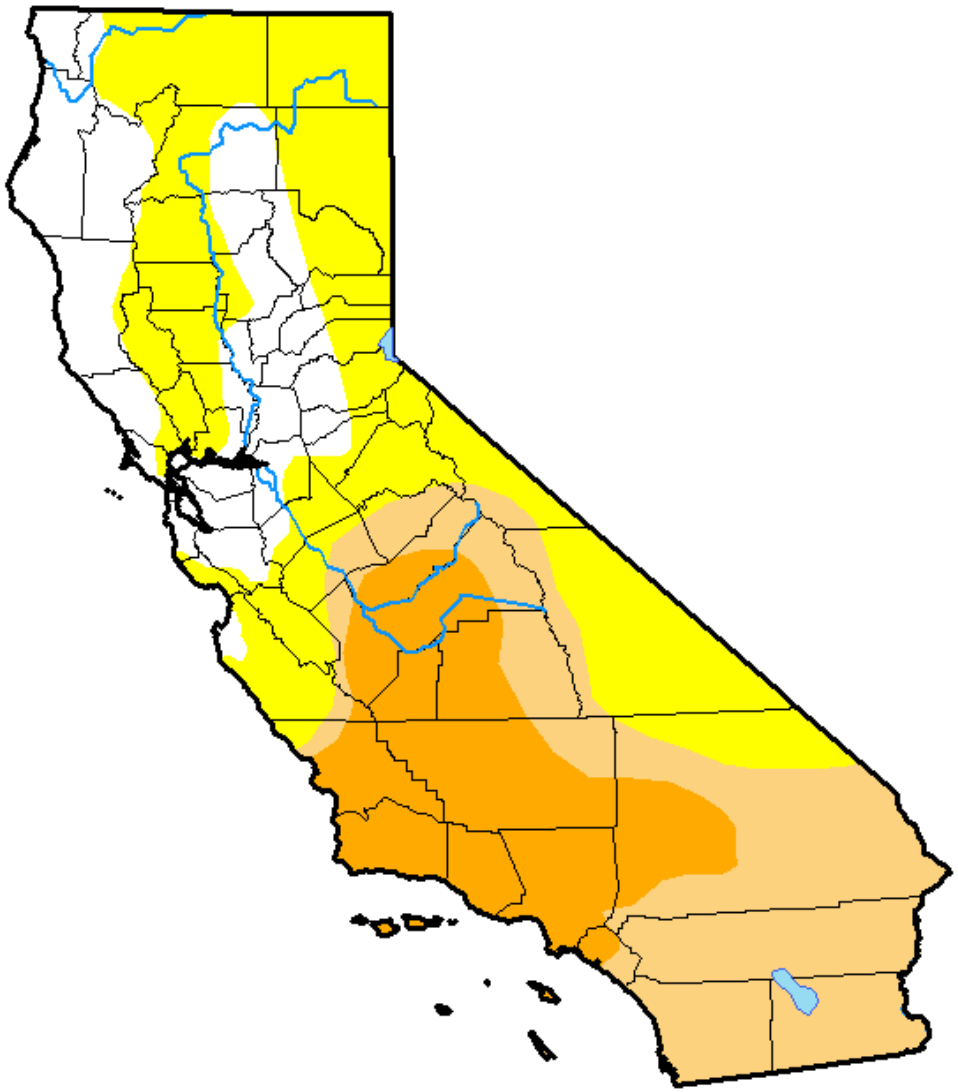


Observed to Date Percent of Average: 59% (3880 kaf) **Water Year to Date Average: 6580 kaf**

WY Volume Average | WY Volume Median | WY to Date Obs | WY to Date Avg | Daily Obs | Obs Peak

ESP WY Vol Fcst 10% | ESP WY Vol Fcst 25% | ESP WY Vol Fcst 50% | ESP WY Vol Fcst 75% | ESP WY Vol Fcst 90%

U.S. Drought Monitor
California



February 13, 2018

(Released Thursday, Feb. 15, 2018)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	18.29	36.00	25.73	19.98	0.00	0.00
Last Week *02-06-2018*	18.27	36.13	39.21	6.39	0.00	0.00
3 Months Ago *11-14-2017*	73.98	17.78	8.24	0.00	0.00	0.00
Start of Calendar Year *01-02-2018*	55.70	31.61	12.69	0.00	0.00	0.00
Start of Water Year *09-26-2017*	77.88	13.88	8.24	0.00	0.00	0.00
One Year Ago *02-14-2017*	43.94	31.86	16.78	6.68	0.73	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

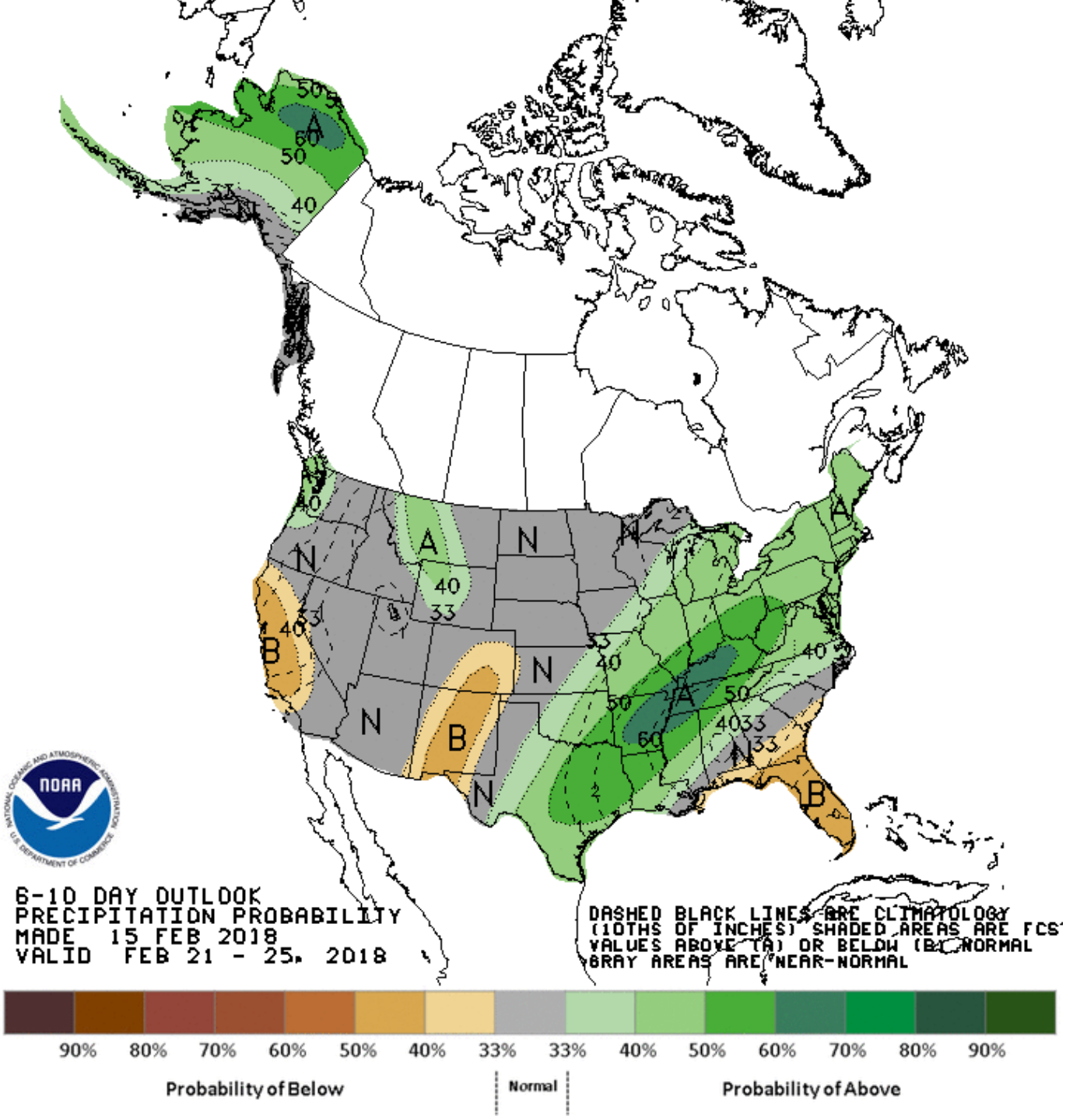
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

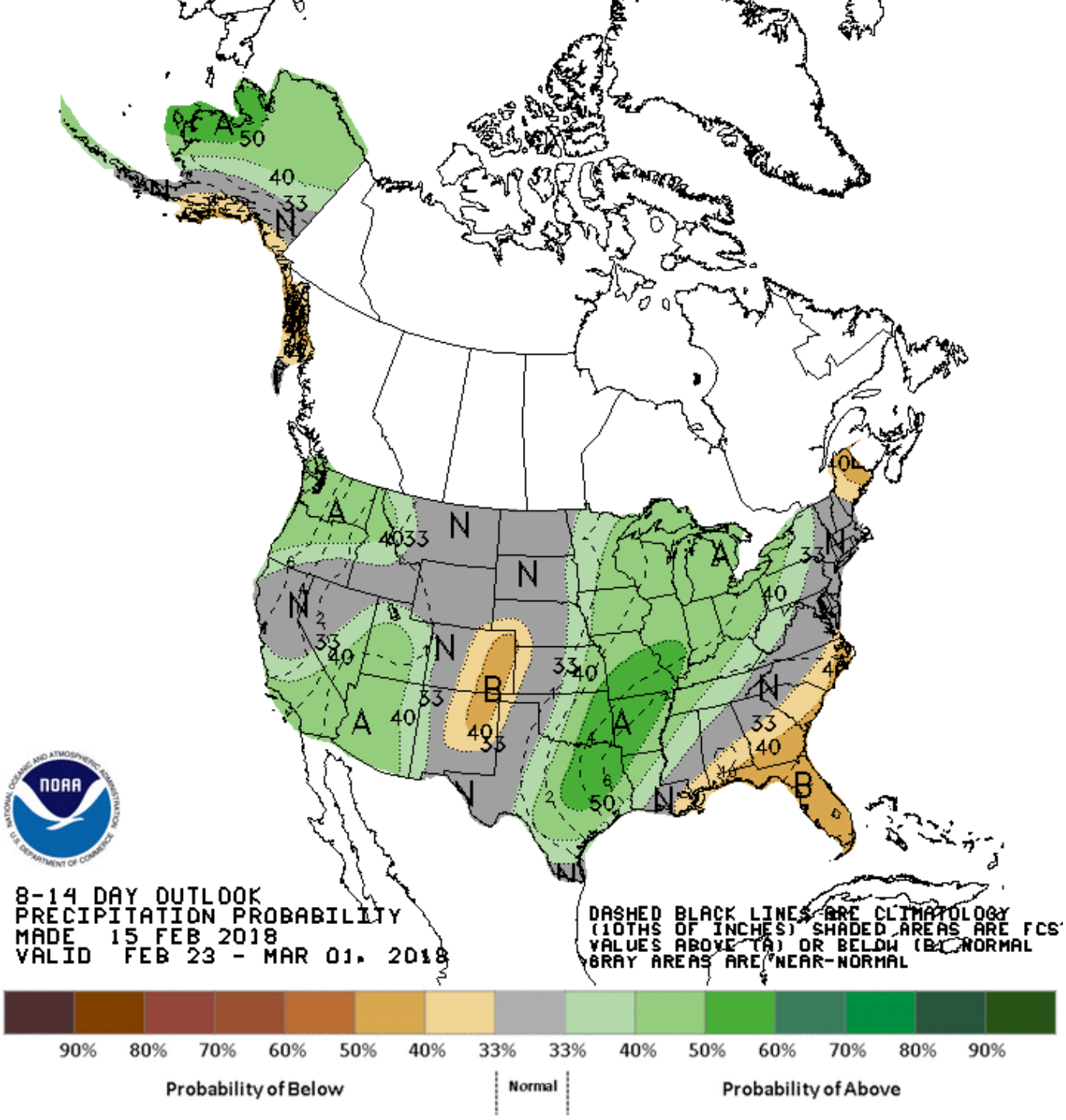
Author:

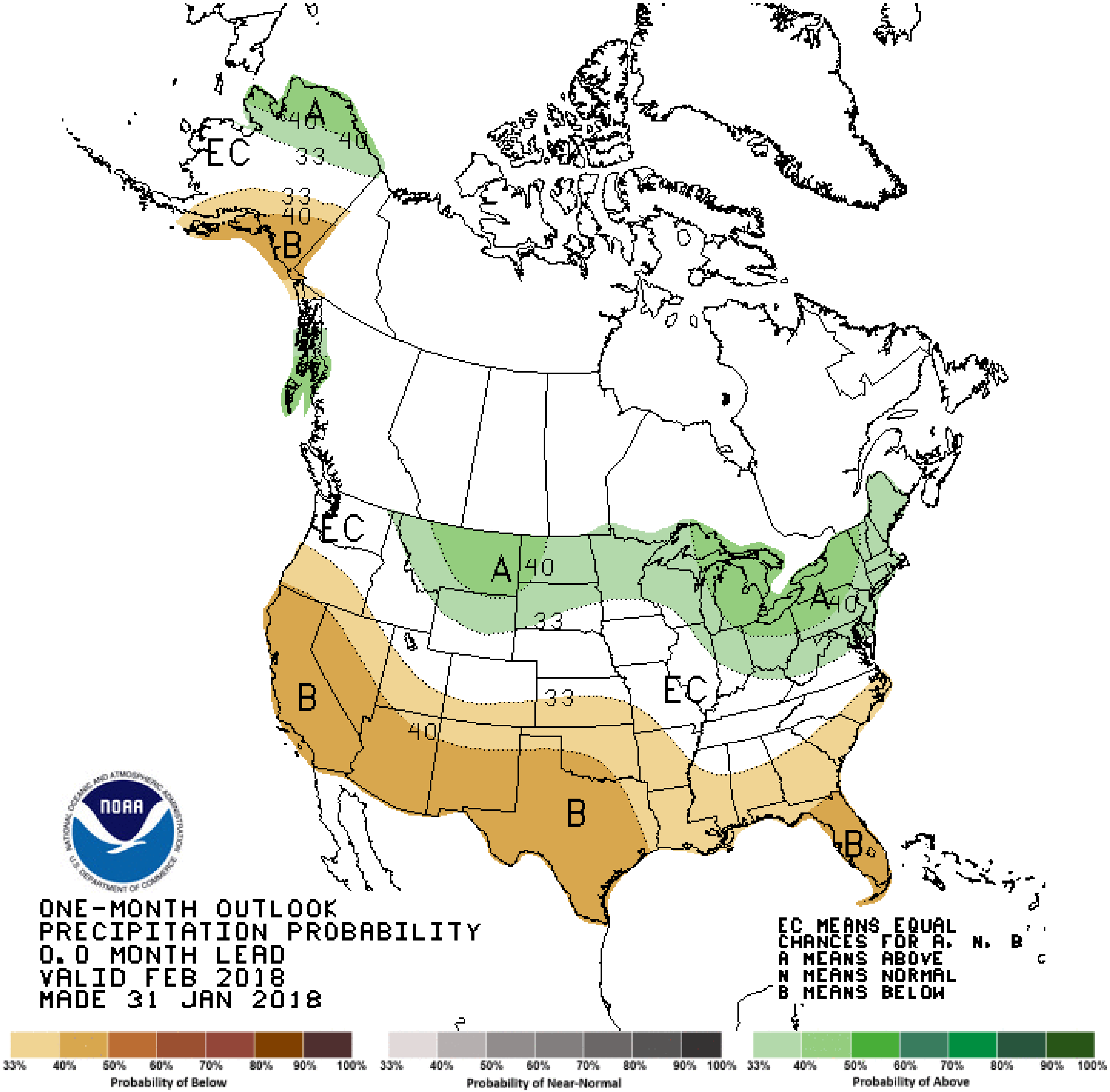
Eric Luebehusen

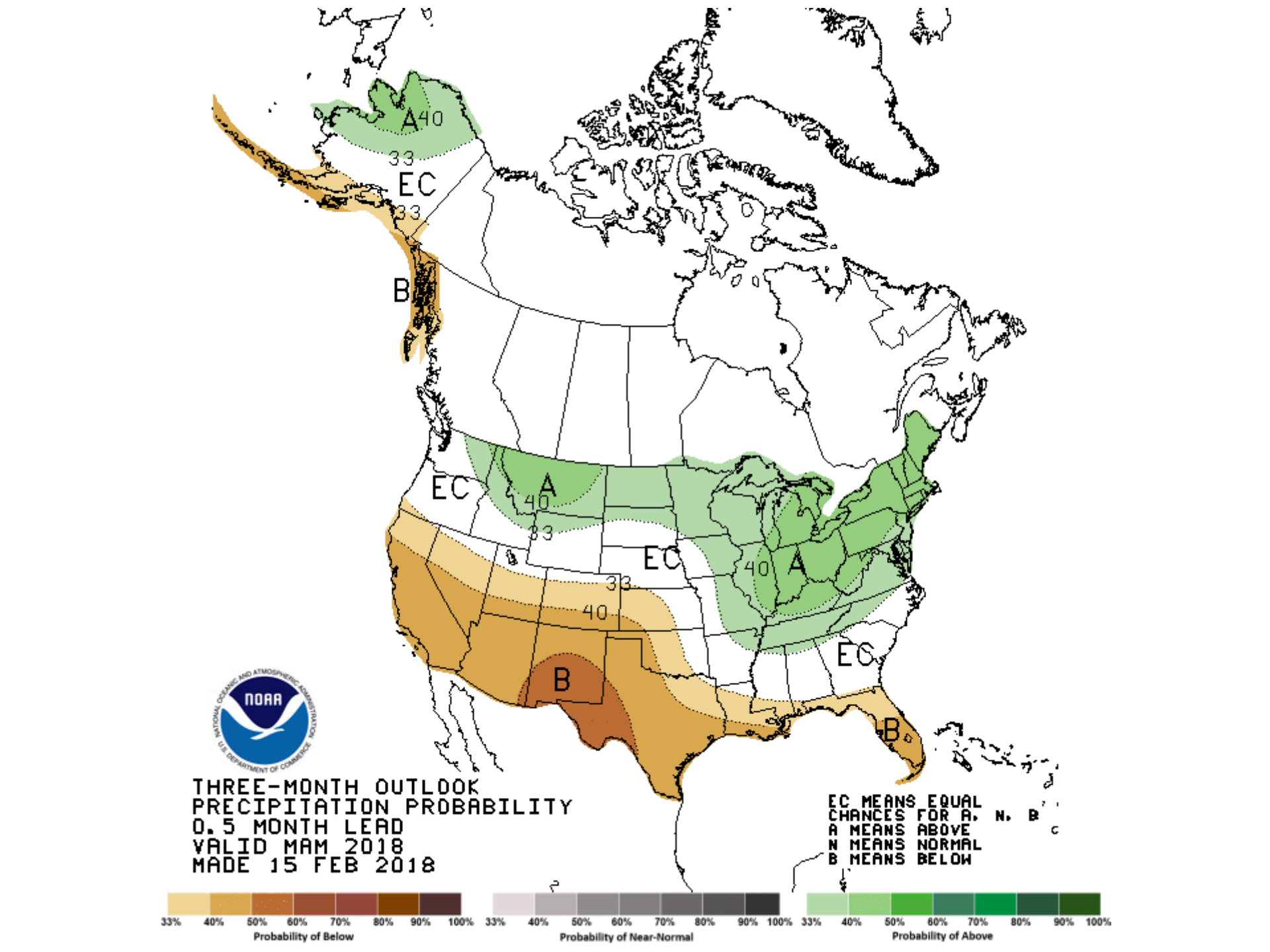
U.S. Department of Agriculture

http://droughtmonitor.unl.edu/


6-10 DAY OUTLOOK
PRECIPITATION PROBABILITY
MADE 15 FEB 2018
VALID FEB 21 - 25, 2018
DASHED BLACK LINES ARE CLIMATOLOGY
(10THS OF INCHES) SHADED AREAS ARE FCS
VALUES ABOVE (A) OR BELOW (B) NORMAL
GRAY AREAS ARE NEAR-NORMAL
90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%
Probability of Below
Normal
Probability of Above


8-14 DAY OUTLOOK
PRECIPITATION PROBABILITY
MADE 15 FEB 2018
VALID FEB 23 - MAR 01. 2018
DASHED BLACK LINES ARE CLIMATOLOGY
(10THS OF INCHES) SHADED AREAS ARE FCS
VALUES ABOVE (A) OR BELOW (B) NORMAL
GRAY AREAS ARE NEAR-NORMAL
90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%
Probability of Below
Normal
Probability of Above

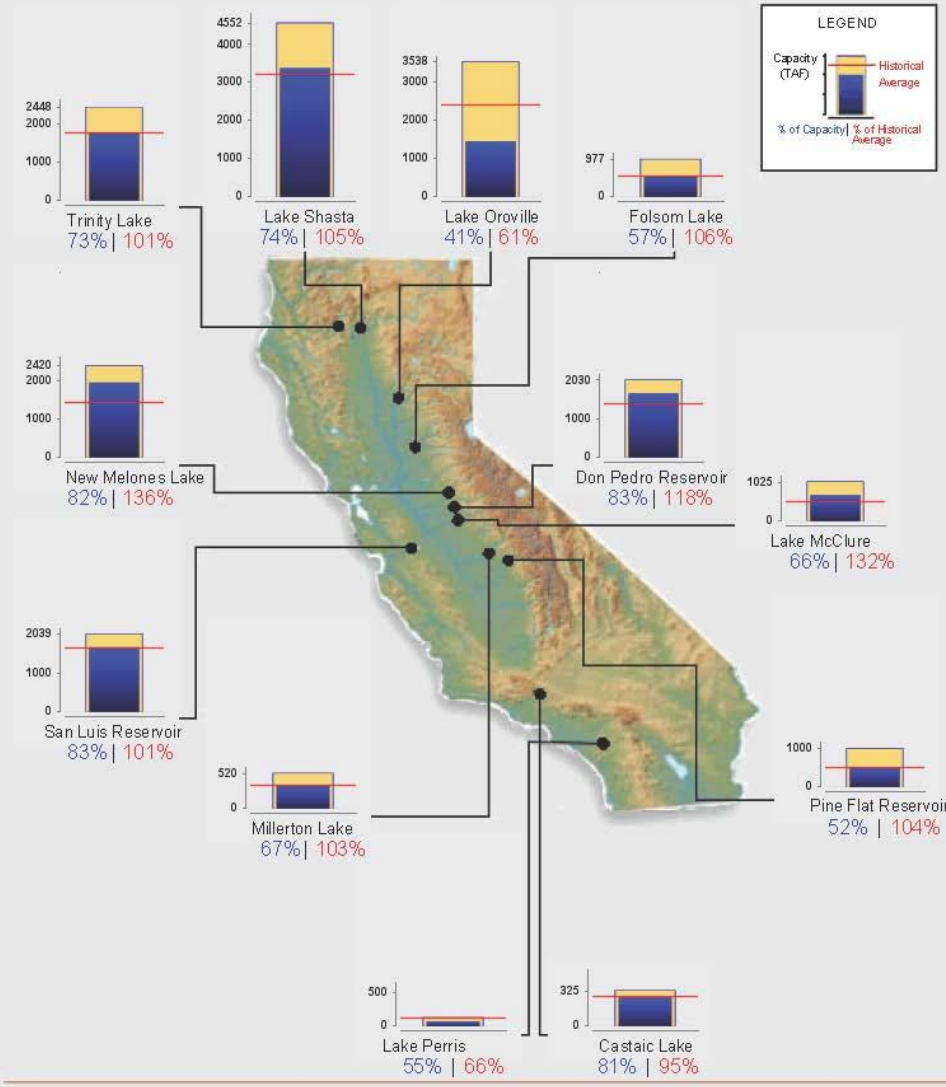

EC
A
40
40
33
33
40
B
EC
A
40
33
A
40
EC
33
40
33
B
B
B
NOAA
ONE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.0 MONTH LEAD
VALID FEB 2018
MADE 31 JAN 2018
EC MEANS EQUAL CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Below
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Near-Normal
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Above


A
40
33
EC
33
B
EC
A
40
33
EC
40
A
33
40
EC
B
B
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID MAM 2018
MADE 15 FEB 2018
EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Below
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Near-Normal
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Above

Reservoir Conditions

Ending At Midnight - February 15, 2018

CURRENT RESERVOIR CONDITIONS

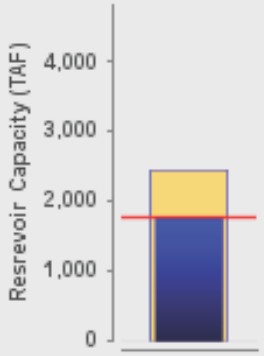


Graph Updated 02/16/2018 11:15 AM

Reservoir Conditions - Trinity Lake

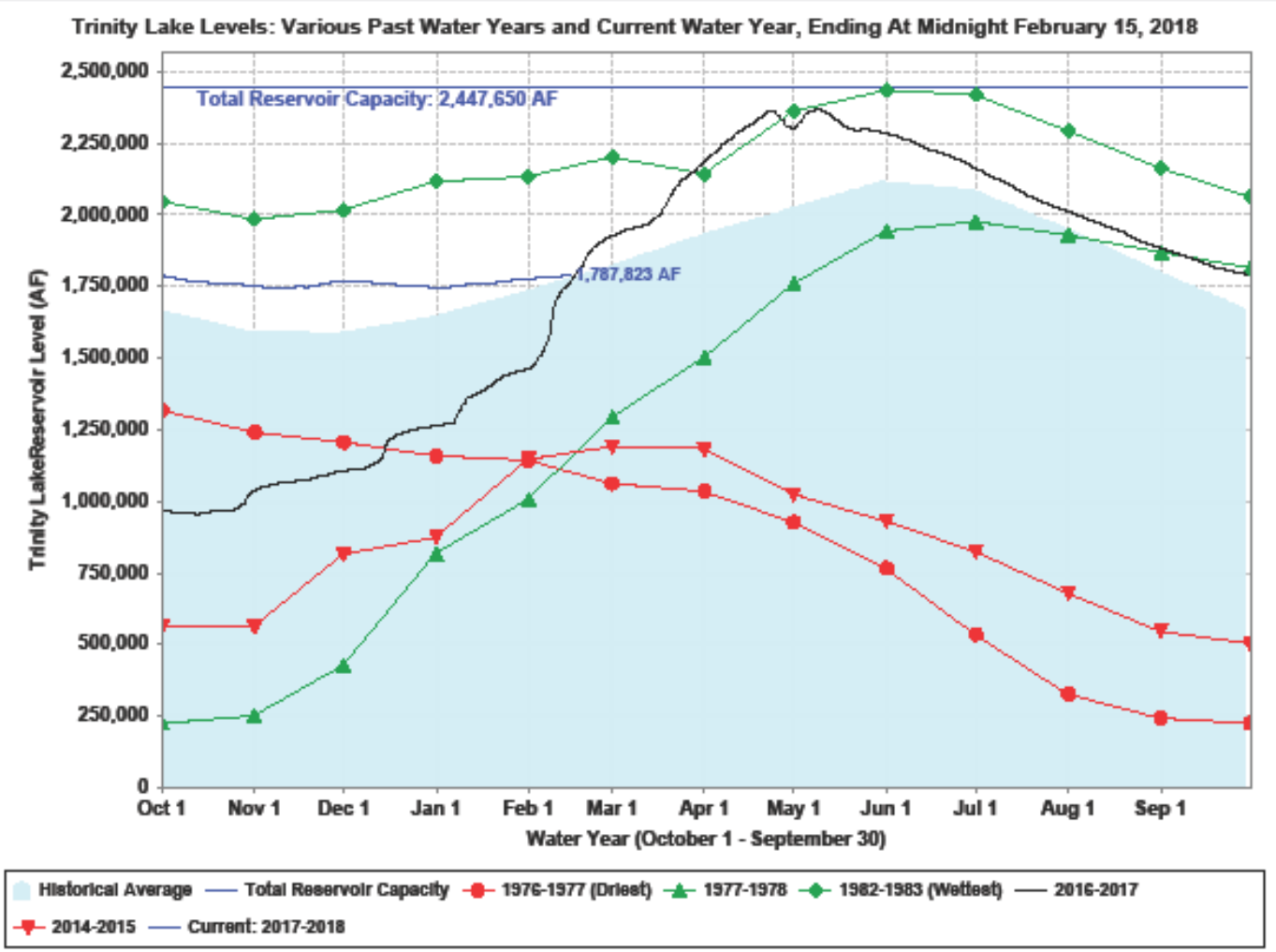
Trinity Lake Conditions

(as of Midnight - February 15, 2018)



Current Level: 1,787,823 AF

73% (Total Capacity) | 101% (Historical Avg.)

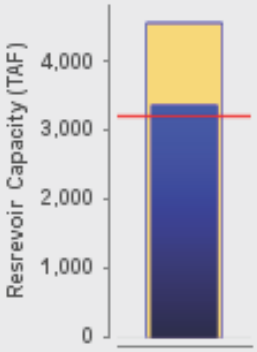


Data Updated 02/16/2018 11:15 AM

Reservoir Conditions - Lake Shasta

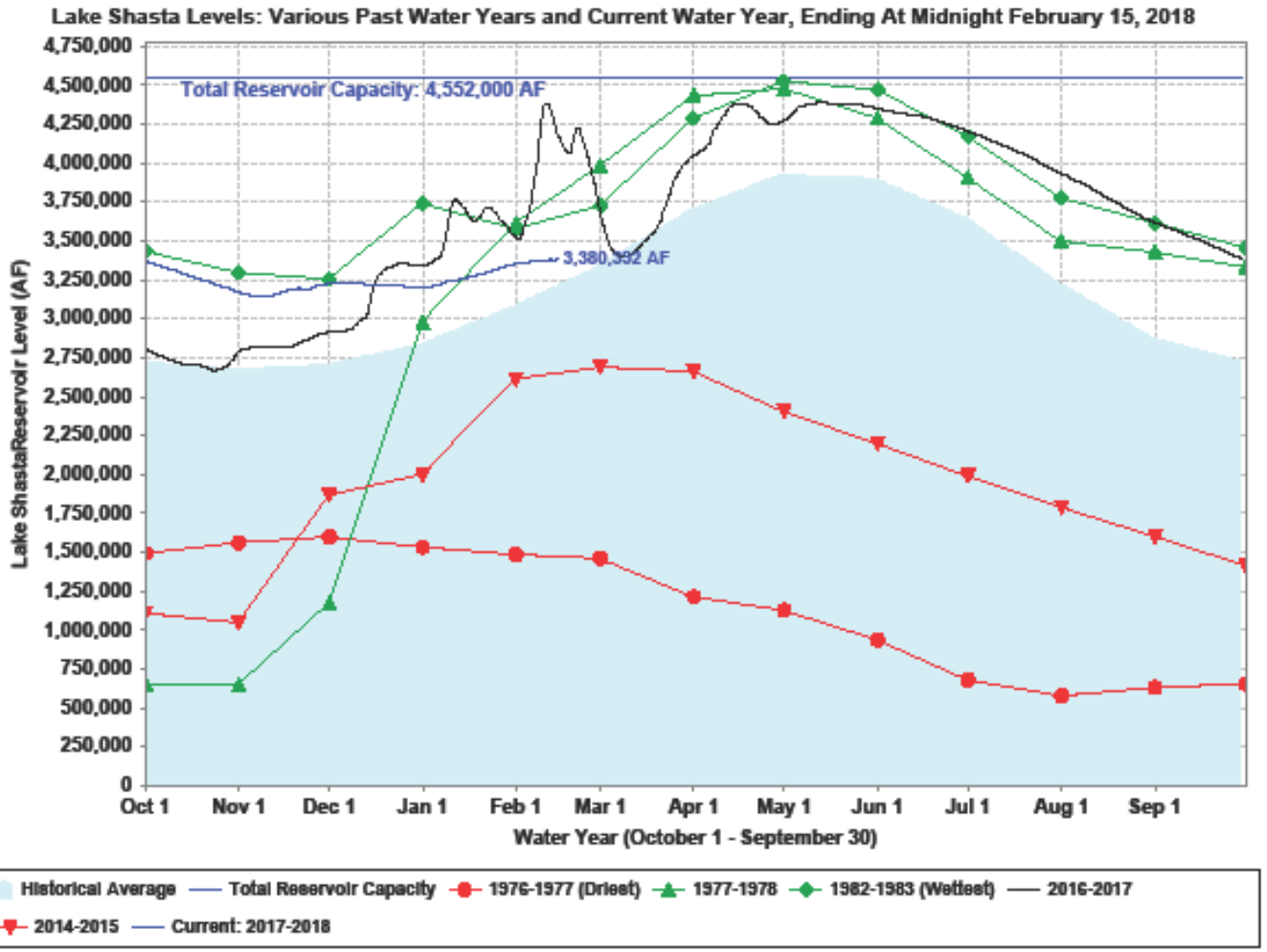
Lake Shasta Conditions

(as of Midnight - February 15, 2018)



Current Level: 3,380,392 AF

74% (Total Capacity) | 105% (Historical Avg.)

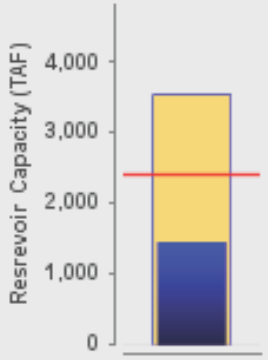


Data Updated 02/16/2018 11:15 AM

Reservoir Conditions - Lake Oroville

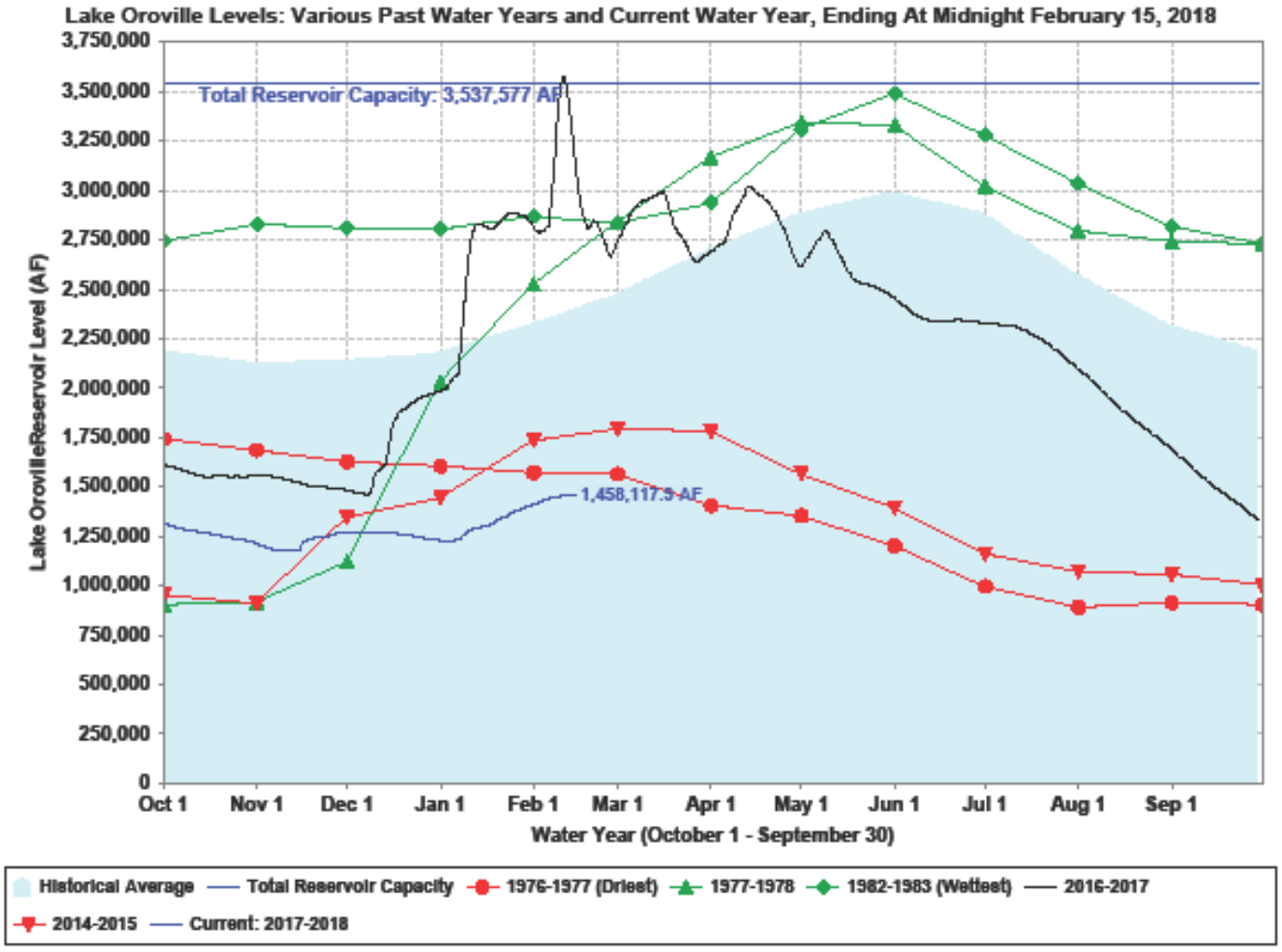
Lake Oroville Conditions

(as of Midnight - February 15, 2018)



Current Level: 1,458,117.9 AF

41% (Total Capacity) | 61% (Historical Avg.)

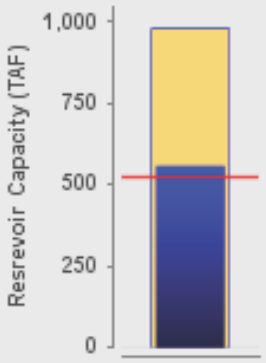


Data Updated 02/16/2018 11:15 AM

Reservoir Conditions - Folsom Lake

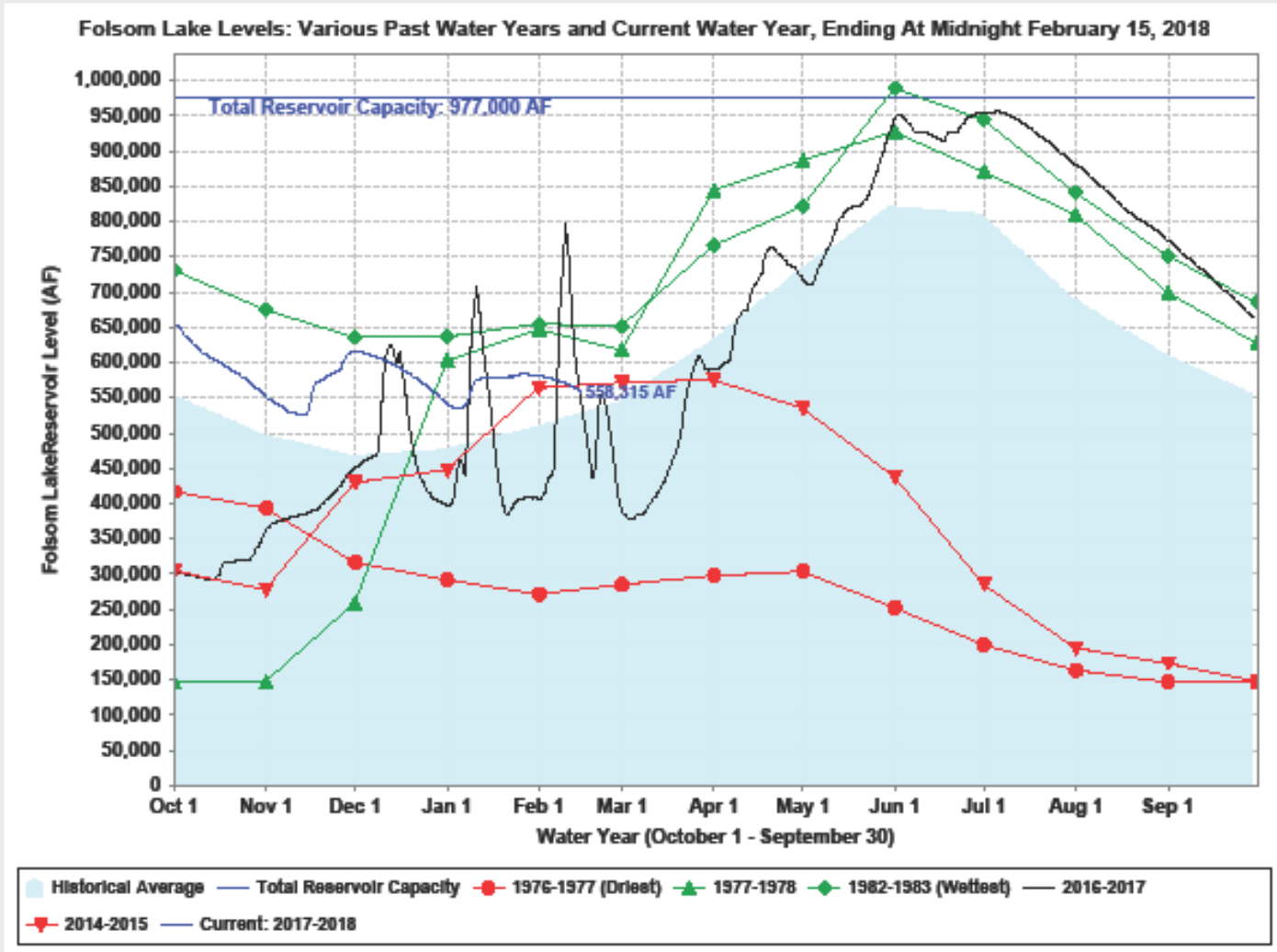
Folsom Lake Conditions

(as of Midnight - February 15, 2018)



Current Level: 558,315 AF

57% (Total Capacity) | 106% (Historical Avg.)

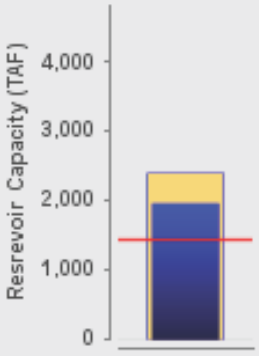


Data Updated 02/16/2018 11:15 AM

Reservoir Conditions - New Melones

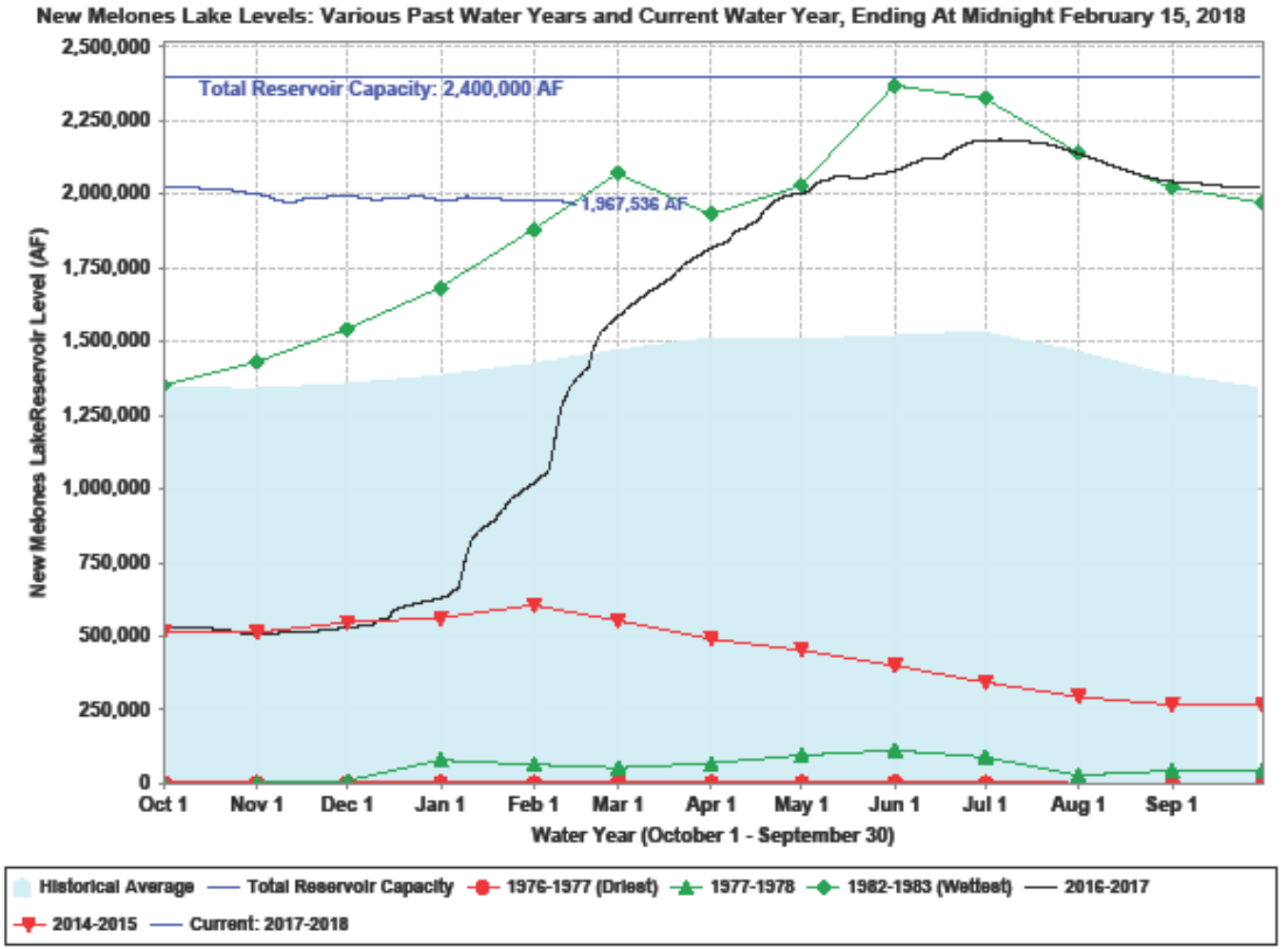
New Melones Lake Conditions

(as of Midnight - February 15, 2018)



Current Level: 1,967,536 AF

82% (Total Capacity) | 136% (Historical Avg.)

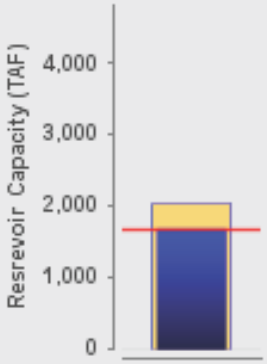


Data Updated 02/16/2018 12:15 PM

Reservoir Conditions - San Luis Res

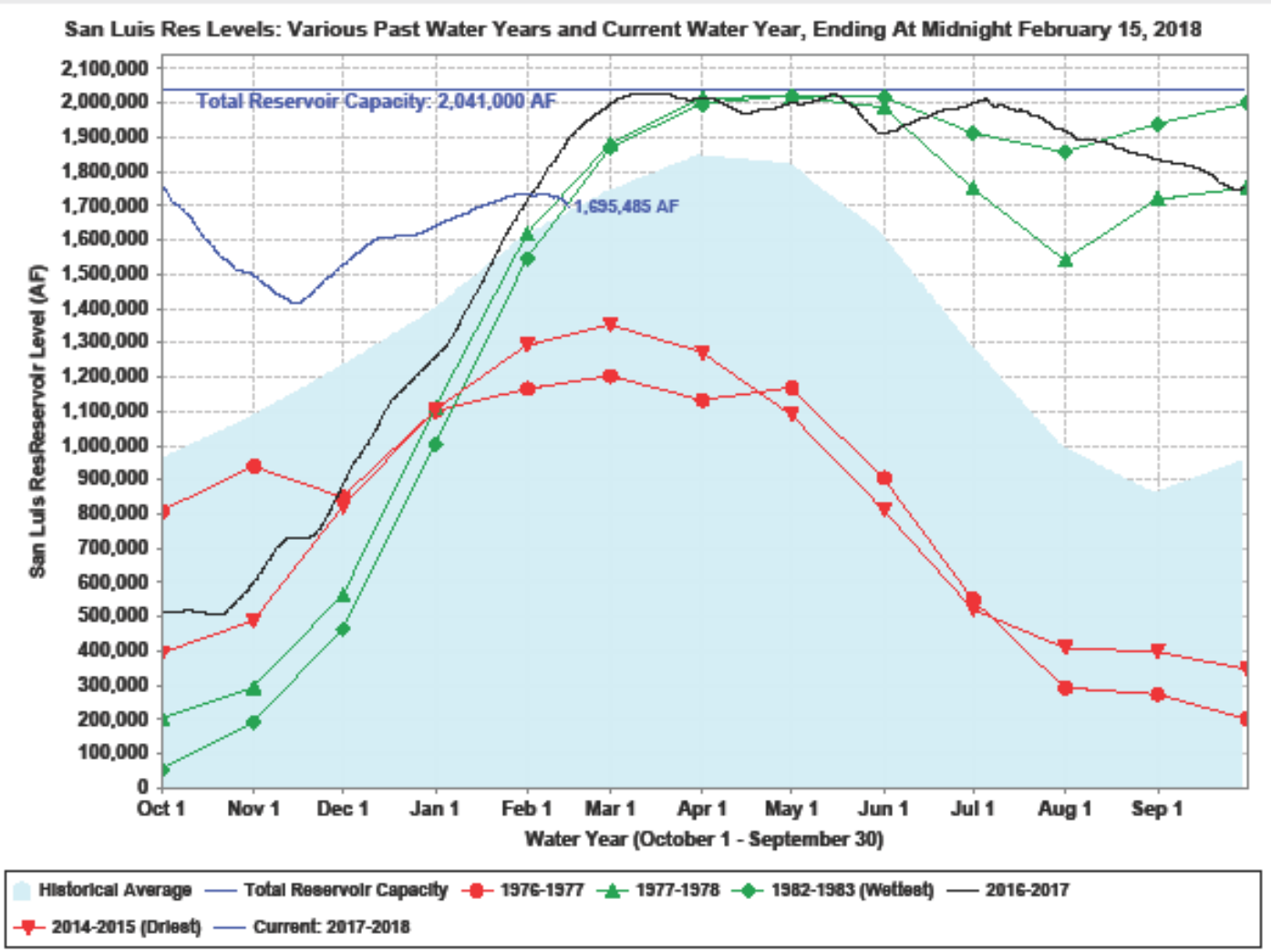
San Luis Res Conditions

(as of Midnight - February 15, 2018)



Current Level: 1,695,485 AF

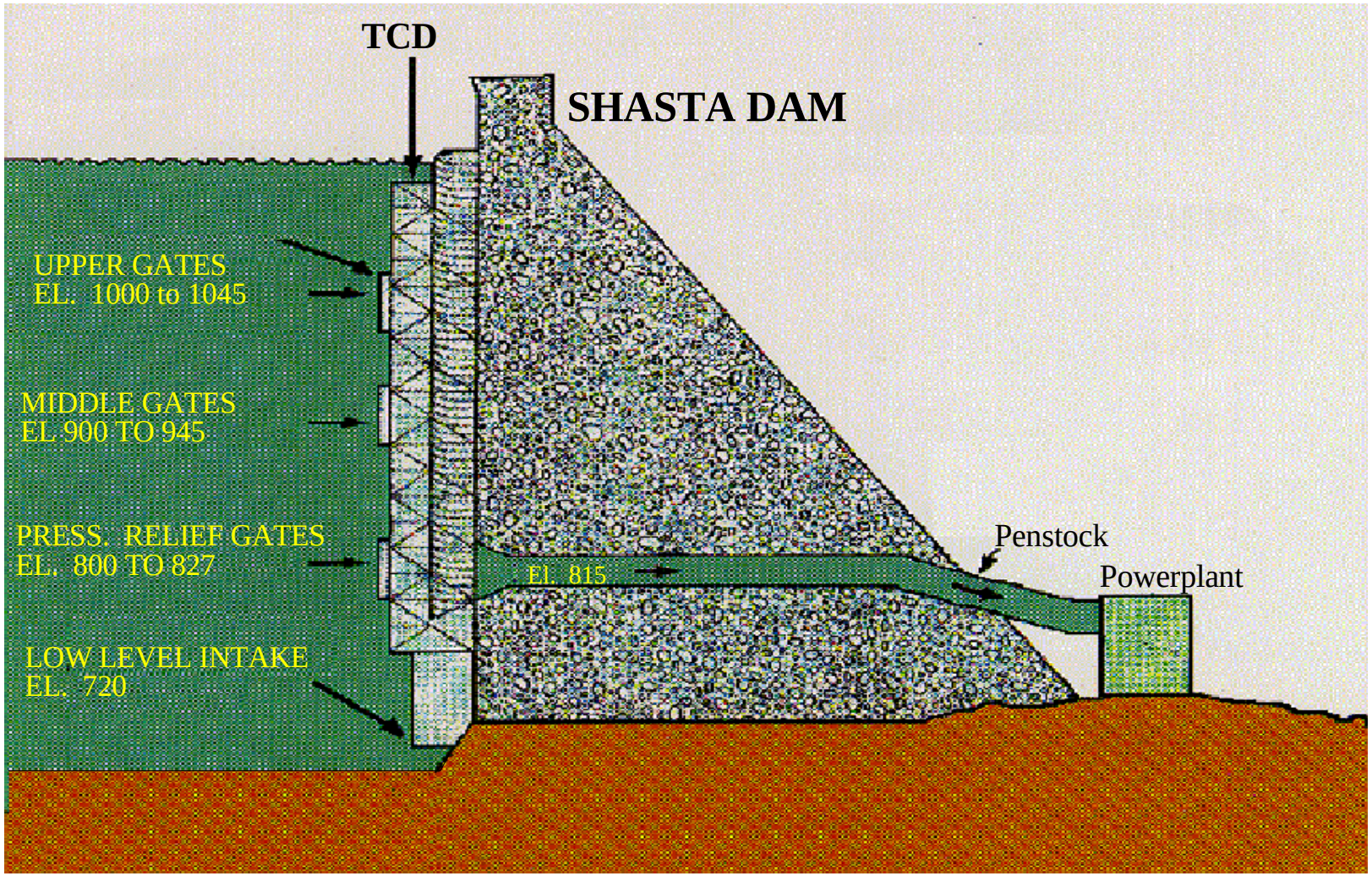
83% (Total Capacity) | 101% (Historical Avg.)

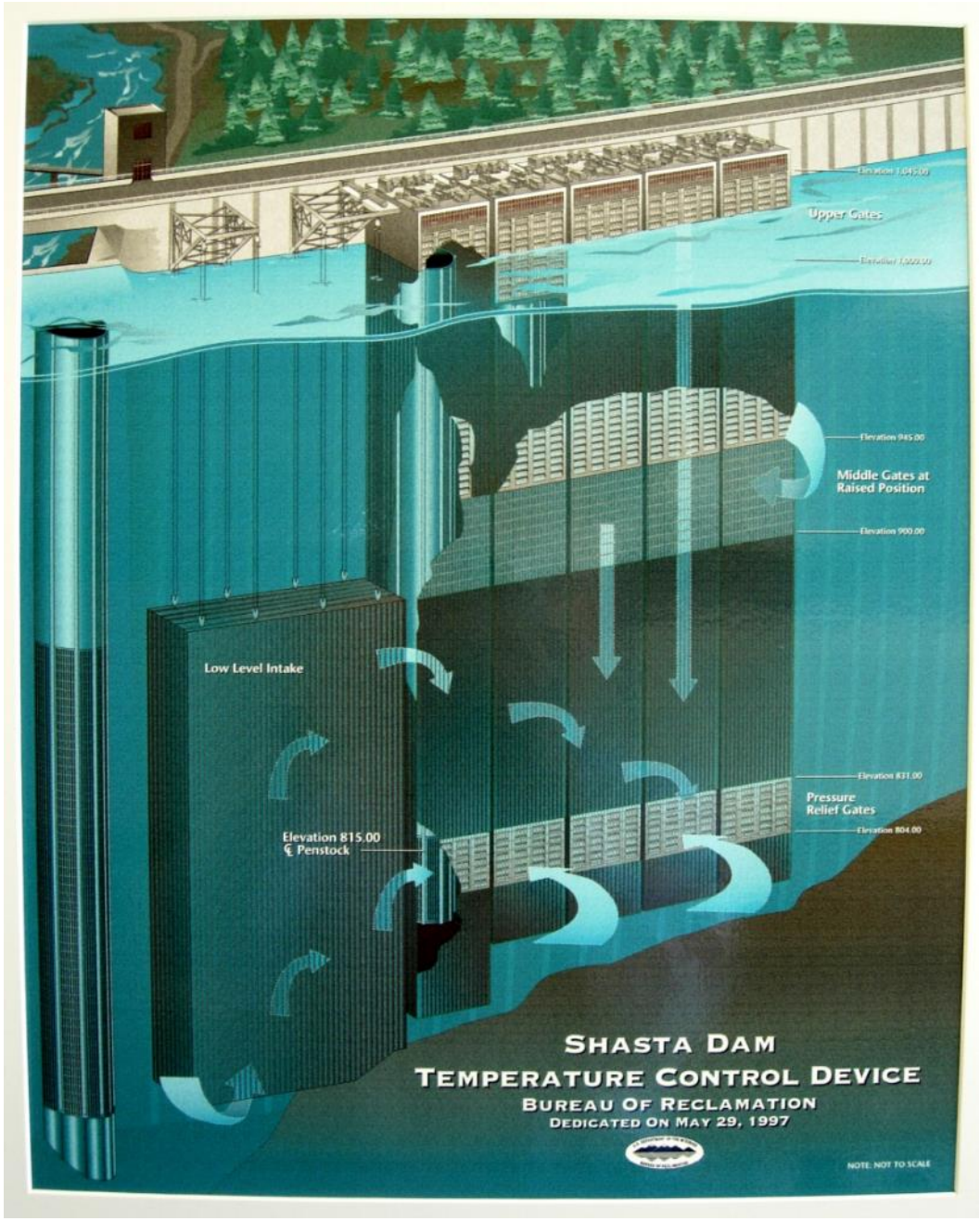


Data Updated 02/16/2018 12:15 PM

Sacramento River Temperature Management

- Sacramento River Temperature Management required under:
  - SWRCB Order 90-5
  - NMFS 2009/2011 BiOp, Action I.2.3 and I.2.4


TCD
SHASTA DAM
UPPER GATES
EL. 1000 to 1045
MIDDLE GATES
EL 900 TO 945
PRESS. RELIEF GATES
EL. 800 TO 827
LOW LEVEL INTAKE
EL. 720
El. 815
Penstock
Powerplant


Upper Gates
Elevation 945.00
Middle Gates at Raised Position
Elevation 900.00
Low Level Intake
Elevation 831.00
Pressure Relief Gates
Elevation 804.00
Elevation 815.00
℄ Penstock
SHASTA DAM
TEMPERATURE CONTROL DEVICE
BUREAU OF RECLAMATION
DEDICATED ON MAY 29, 1997
NOTE: NOT TO SCALE

Sacramento River Temperature Management Efforts

- 2017 Temperature Operations Summary
- NMFS BiOp RPA Amendment Process
- Temperature Modeling Review/Refinement Efforts
- 2018 Temperature Operations Planning